

Radical Review

✓

$$\sqrt{36} = 6$$

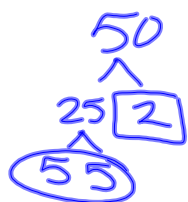


## Steps

1. Factor tree
2. At prime #s, circle each pair and box the other prime #s
3. Write each pair once on outside
4. Write each single once on inside

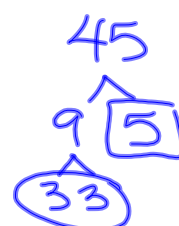
"Couples go out, singles stay in"

~~$$\sqrt{50}$$~~



$$= 5\sqrt{2}$$

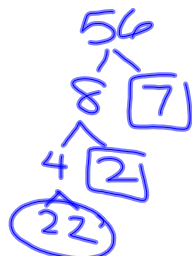
~~$$\sqrt{45}$$~~



$$= 3\sqrt{5}$$

$$\cancel{\text{ex}} \sqrt{56}$$

$$2\sqrt{14}$$



$$\cancel{\text{ex}} \sqrt{24}$$

$$= 2\sqrt{6}$$



$$\cancel{\text{ex}} \sqrt{600}$$

$$10\sqrt{6}$$



Do:

$$\begin{array}{r} \textcircled{1} \sqrt{75} \\ \textcircled{2} \sqrt{48} \end{array}$$

$$\sqrt{75}$$

$$= 5\sqrt{3}$$



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$$\sqrt{48}$$

$$= 4\sqrt{3}$$



~~ex~~  $\sqrt{30}$

$\begin{array}{c} 30 \\ \swarrow \searrow \\ 10 \quad 3 \\ \swarrow \searrow \\ 5 \quad 2 \end{array}$

No couples

#s on Outside

~~ex~~  $5\sqrt{8}$

$\downarrow$  leave the 5 alone  
 $5 \quad 2\sqrt{2}$   
 $10\sqrt{2}$

$\begin{array}{c} 8 \\ \swarrow \searrow \\ 4 \quad 2 \\ \swarrow \searrow \\ 2 \quad 2 \end{array}$

~~ex~~  $3\sqrt{12}$

$\downarrow$   
 $3 \quad 2\sqrt{3}$   
 $\circlearrowleft 6\sqrt{3}$

$\begin{array}{c} 12 \\ \swarrow \searrow \\ 2 \quad 6 \\ \swarrow \searrow \\ 3 \quad 2 \end{array}$

~~ex~~  $7\sqrt{50}$

$\downarrow$   
 $7 \quad 5\sqrt{2}$   
 $\circlearrowleft 35\sqrt{2}$

$\begin{array}{c} 50 \\ \swarrow \searrow \\ 25 \quad 2 \\ \swarrow \searrow \\ 5 \quad 5 \end{array}$

With a variable

$$\text{ex: } \sqrt{25x^2}$$

Diagram: 25 is circled with a 5 above it.  $x^2$  is circled with an x above it.

$$= 5x$$

No singles no symbol

$$\text{ex } \sqrt{63y^3}$$

Diagram: 63 is circled with a 3 above it. 7 is circled with a 7 above it.

$$= 3y\sqrt{7y}$$

Diagram:  $y^3$  is circled with a y above it. 7 is circled with a 7 above it.

Multiplication

- inside  $\times$  inside
- outside  $\times$  outside

$$\text{ex } 2\sqrt{5} \cdot \sqrt{10}$$

$$2\sqrt{50}$$

$$\downarrow$$

$$2 \cdot 5\sqrt{2}$$

$$= 10\sqrt{2}$$

Diagram: 50 is circled with a 10 above it. 2 is circled with a 2 above it.

$$\text{ex } 8\sqrt{2} \cdot 5\sqrt{6}$$

$$40\sqrt{12}$$

$$\downarrow$$

$$40 \cdot 2\sqrt{3}$$

$$= 80\sqrt{3}$$

Diagram: 12 is circled with a 4 above it. 3 is circled with a 3 above it.